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ABSTRACT

The central issue in the analysis of the data in this study is the ability of the social science faculty to contribute to the operations of the university as an information system. This means a contribution at all levels from basic science research to working with the public. The study attempts to determine: (1) the extent to which the efforts of the social scientists in one United States and two Taiwan public universities operate at all activity levels from theory to practice; and (2) the perceptual and organizational constraints that hinder them from functioning effectively at each. The universities studied were the Columbia Campus of the University of Missouri, the National Taiwan University, and Chunghsing University. Interviews were conducted with regularly appointed social science faculty members on all three campuses concerning their own university status, the organizational constraints under which they work, and their own perception of how much they think a public university should be involved in a variety of teaching, research, and service activities. They were also asked questions designed to elicit information about communicative output--books, journal articles, research reports, and the chief audience to which each was primarily directed. (Author/JMF)

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UNIVERSITY AS A THEORY TO PRACTICE INFORMATION SYSTEM: A STUDY OF THE COMMUNICATIVE BEHAVIOR OF THE SOCIAL SCIENCE FACULTY IN A U.S. AND TWO TAIWAN PUBLIC UNIVERSITIES

5/12/75

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and Shih Tung Lin*

1. A Perspective on University and Society

In a society where social change is inevitable and indeed necessary and in which expertise and meritocracy is demanded in the proliferation of increasingly specialized knowledge areas, there must be centers where new knowledge is generated and disseminated to segments of the society and persons that can and indeed must use it. Folk knowledge is hardly sufficient for any knowledge areas any more and almost for nothing can the development of new information and innovations be left to individual initiative. There are always areas where the need for specialty information is too crucial to be left to chance. A society must accordingly become organized to meet these special informational needs. This the authors maintain can often best be done in functionally differentiated and organizationally articulated mechanisms capable of extending the frontiers of scientific knowledge while at the same time reformulating a part of it into innovative ideas and practices which in turn are sufficiently validated for local user clienteles outside of academia. Social systems of this type were perfected in "so-called" land grant universities, perhaps first in agriculture and in turn diffused and adapted with organizational variations to the development and dissemination of information in specialty fields in industry and public services where a continuous updated supply of scientific information is needed.

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Although specialties in industry have demonstrated an inordinate capacity to develop innovations derived very heavily from the basic sciences -- while at the same time contributing somewhat to basic science knowledge -- and in disseminating it mostly in the form of products sold to users, there are still matters of broad general concern, including the extension of basic science knowledge to which some collective public effort must be directed (Machlup, 1962).

In a society dedicated to competitive development of private interests, where else than in a public university can the broad societal needs best be addressed (Sauer, 1962)? Land grant universities through their research and development have become knowledge centers with a capacity for extending the frontiers of basic science knowledge from which applicable ideas and innovations increasingly emerge. This is done through a series of activities ranging from basic science research to actual practice. These include:

a. Doing basic research,

b. Doing applied research,

c. Developing innovations potentially useful for non-scientist users,

d. Testing innovations under local conditions for determining their adequacies or inadequacies for local use,

e. And finally, getting the information disseminated to potential users and integrated into their life styles.

The functional requisites essential for the achievement of these objectives include research and development, information dissemination and integration of the new elements into the life patterns of local users (see Figure 1).[1] The research and development and information dissemination functions are clearly lodged within the universities as they have ideal typically developed while integration is and surely will continue to remain the primary responsibility of user groups. This is not to suggest that the

TRANSFORMATION CONTINUUM FROM Basic Science to Use	INNOVATION Research and Development	FUNCTIONS THAT MUST BE PERFORMED DISSEMINATION of the information	INTEGRATION - fitting the new into already existing conditions

RESEARCH
-in the Basic Sciences

1. Addition to basic knowledge, the goal.

- in the Applied Sciences

2. Practical application of scientific knowledge, the goal.

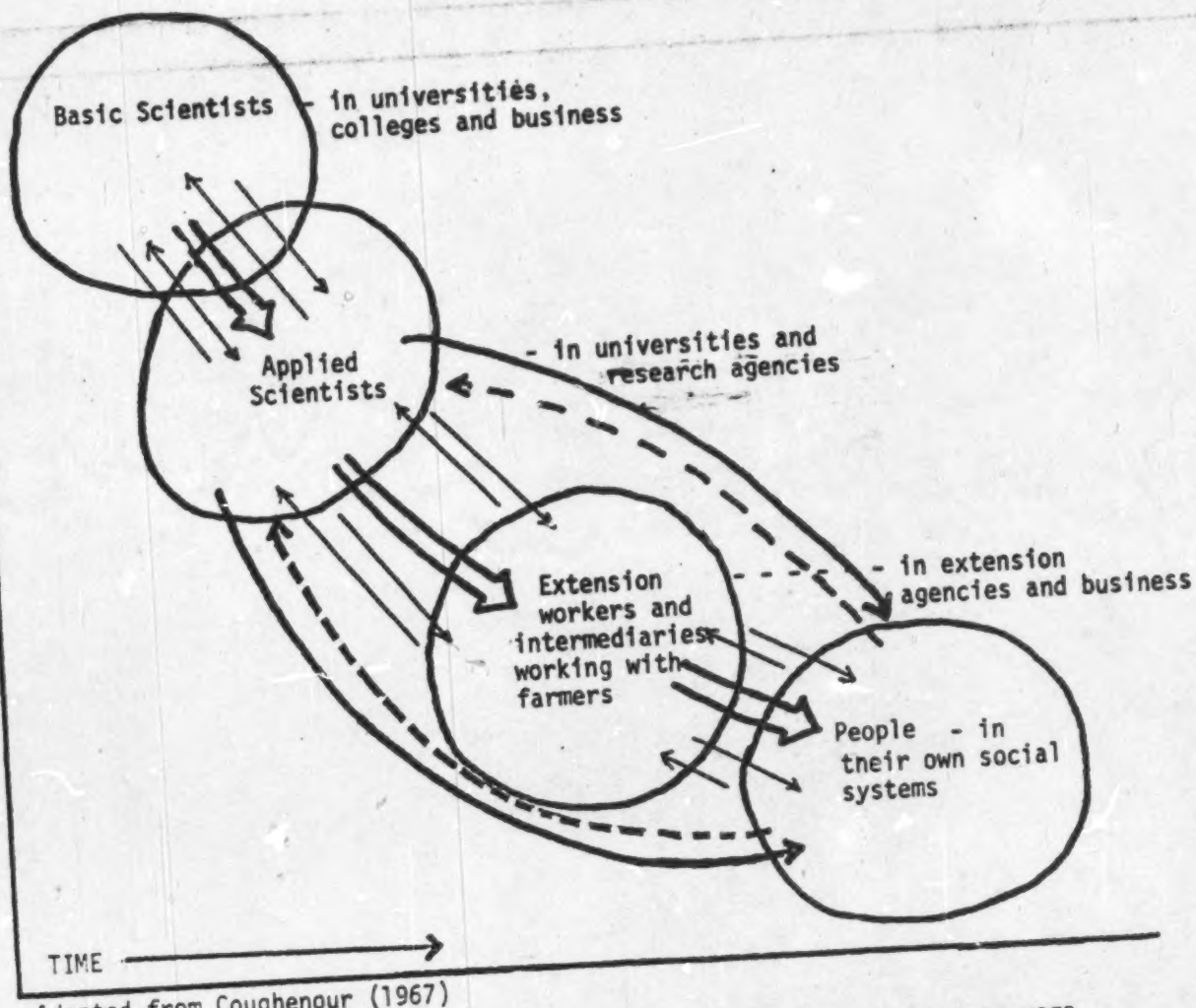
3. Innovation - finding applications that might work.

ADAPTIVE TESTING

4. Local trials to determine:
   Will it work?
   Will it pay?
   How it fits in

APPLICATION

5. Putting locally validated innovations and information to use in own situation.


Basic Scientists
- in universities, colleges and business
Applied Scientists
- in universities and research agencies
Extension workers and intermediaries working with farmers
- in extension agencies and business
People - in their own social systems
TIME

Adapted from Coughenour (1967)

Figure 1. GENERAL INFORMATION-TECHNOLOGY DEVELOPMENT-DISSEMINATION MODEL: FROM BASIC SCIENCE TO USER

university cannot also contribute to this end. Thus, organizational arrangements capable of extending frontiers of social science knowledge and translating it into usable practice is a social invention that is capable of developing and supplying specialty information in any field where it is needed. It has greatly accelerated the rate at which theory and principles on the frontiers of academic knowledge are built into the utilitarian concerns of mankind and the effectiveness with which it is done.

Although so-called land grant universities achieved a substantial degree of perfection in their agricultural sectors, other colleges representing more general societal interests, of which the social sciences are of special concern in this paper, have not done so well. Indeed, efforts to translate their theoretical knowledge into usable practice is often deficient. This may be even more likely in situations where universities have no extension obligations.

2. Purpose and Scope of this Paper

Definition of the Problem

Questions addressed in this paper are to determine: (1) the extent to which the efforts of the social scientists in one United States and two Taiwan public universities operate at all activity levels from theory to practice; and (2) the perceptual and organizational constraints that hinder them from functioning effectively at each.

General hypotheses posed are that communication will be:

a. More directed to academic than to extension audiences,

b. Within extension, more to professionals than to the public, and that

c. Contributions will be more universally distributed in the academic than in the extension content of communication.

The rationale for these general hypotheses derive from documented deference of academics to academia (Havelock, 1972, 3-14; Reiff, 1961 and own work involving the social science faculty in the universities under consideration here (Reddy and Lionberger, 1975a and Lionberger and Reddy, 1975b). This provides the base for hypotheses "a" and "c." For "b" the reasoning is that deference to professionals is more acceptable to academics, and thus the faculty, than deference to the public. The further reasoning is that this kind of deference will place a constraint on the faculty in regard to audiences to which their written and oral communication will be directed.

The Universities Studied

The study was centered in three public universities, one, the Columbia Campus of the University of Missouri -- of the land grant (people's university) type -- (Kellogg and Knapp, 1966); and two in Taiwan, the National Taiwan University and Chunghsing University.

Although the faculty in the last may have been cognizant of land grant university concepts having to do with information system and people orientation which would incline them to communicate to publics outside of the university, they may also do so for other reasons, namely, their expected roles in a society committed to social and economic planning.

The University of Missouri Columbia Campus (United States University) was one of the first land grant universities to achieve a functional capacity to do research and engage in agricultural extension. The Hatch Act (1887) provided for research and the Smith Liver Act (1914) for extension (Longwell, 1970). In 1962 the University of Missouri administration decreed that the extension function should also be extended to all colleges and academic disciplines in the university. With research an

already accepted activity, the way was cleared for social scientists in the various departments and divisions to officially join in extending the knowledge of their disciplines to potential user clienteles outside of their own academic disciplines.

The National Taiwan University, which stands at the apex of higher education in Taiwan, was initially established in 1928 by the Japanese as Taihoku University. Although no formal provision is made for extension work, faculty members have many contacts with public agencies at home and abroad; also, some have voluntarily provided child welfare and youth counseling services on informal and formal bases.

Chunghsing University, established in 1961 with the merger of two provincial colleges and the addition of a new one, has somewhat more of an applied orientation. In 1966 an extension service, quite in accord with the land grant university pattern was added to the College of Agriculture. Faculty in the various departments including Agricultural Economics were designated to provide specialty advisory services to the public.

The Faculty Interviewed

The intent was to interview all regularly appointed social science faculty members on all of the three campuses. This was approximated in all cases with 125 from the Columbia Campus and 103 from the two Taiwan universities. Divisions on the Columbia Campus included the Colleges of Arts and Science, Agriculture, Home Economics; and Departments of Agricultural Economics, Economics, Political Science, Regional and Community Affairs, General and Rural Sociology, Psychology, and Anthropology. On the Taiwan campuses social scientists from the Departments of Agricultural Extension, Agricultural Economics, Sociology, Economics, Political Science, Public Health, Anthropology, Psychology, Agricultural Education in the various divisions were included.

3. Methods and Procedure

Data Collection

Faculty members in the two universities were interviewed by staff members from the Department of General and Rural Sociology of the University of Missouri, Columbia Campus. Each was asked about their own university status, the organizational constraints under which they work and their own perception of how much they think a public university should be involved in a variety of teaching, research, and service activities. They were also asked questions designed to elicit information about communicative output -- books, journal articles, research reports (extension and otherwise), conference proceedings, special papers, symposia, seminars, short courses, workshops, speeches, and consultations, radio talks, television appearances, mass media releases, and answers to letters of inquiry and the chief audiences to which each communication was primarily directed -- basic scientists, applied scientists, intermediaries (professionals), or the public.

The Measure of Communicative Output

A suitable measure in this study had to take into account all of the communicative devices or activities habitually used by the faculty to communicate to own kind, professionals (intermediaries) and the public. These, of course, varied greatly by the academic-applied orientation of the faculty member and his target audiences.

Essentially laying aside controversial qualitative vs. quantitative issues (Clark, 1957; Dennis, 1954; Melzer, 1949), the authors chose a measure based strictly on estimated time spent in preparing for and completing communicative activities. A judgmental time standard for each activity supplied by well informed and experienced peers on each campus was applied to the communicative activities reported by each faculty member. The man-days

assigned to each activity was an average of estimates made by the sub-sample of faculty members who had broad experience with the communication activities rated. The score for an individual was the total of the man-day estimates applied to the communicative activities reported in each case.

All estimates were in terms of an eight hour day, 40 hour week, probably far below that actually spent by most faculty members. Although not without fault, indirect and strictly quantitative, the authors feel that it provided a satisfactory measure for comparing volume of communication output.

Data Processing

Tests of hypotheses "a" and "c" were provided by simply:

a. Adding all communication output (in man-day units) that all social science faculty members on each campus directed to audiences along the theory to practice continuum -- basic scientists, applied scientists, professionals, and the public. Communication directed to the basic and applied scientists was labeled as academic and that to professionals and the public as extension.

b. Computing what percent of the total was primarily directed to which level.

A test of the second "hypothesis b" required examination of a contingency table showing the level at which each faculty member produced for academia and extension audiences. Categories of output were stated in terms of journal equivalents or multiples thereof for more meaningful assessment.

Though explanation of communication output along the theory to practice continuum using positional, perceptual, situational, and systemic reward variables of demonstrated explanatory power will be the subject of our subsequent analysis, our concern in this paper is only with perceptual views about the extent to which the faculty feels a public university should be involved in various teaching, research, and extension activities aligned on the theory to practice continuum. For this only simple contingency tables for the three campuses is required and then only for descriptive purposes.

4. The Research Findings

The central issue in the analysis of the data in this study is the ability of the social science faculty to contribute to the operation of the university as an information system. This means a contribution at all levels from basic science research to working with the public, one manifestation of which is to be found in the communication orientation and output of the faculty. Communication can be directed to at least four positions along a continuum from theory to practice, namely, to basic scientists, applied scientists, professionals, or to the public. Communication directed to the first two is, of course, basically academic while that directed to professionals and the public, both outside of academia, is operationally defined as extension communication. Of course, communication at any level can be either written or oral in actual or psuedo face-to-face situations, e.g., in large groups.

In a sense, communication directed to academia presupposes a research base from which to draw and one in which the communicator himself may participate in creating. On the other hand, extension communication may well draw upon knowledge in the discipline quite aside from who was responsible for creating it.

Faculty activities conducive to the university operating at all levels of knowledge, development and dissemination are, of course, quite aside from the more traditional teaching activity still regarded by many of the faculty as central to what a public university is mostly about -- even though this is not a major source of status achievement.

The inclination of people who regard themselves as basic and applied scientists to defer to academia in their writing has already been noted (Havelock, 1971, Chapter 3). We accordingly hypothesized that most of the

communication of the faculty directed to the extension audiences would be mostly to professionals because they are closest to academia and thus presumably better able to "appreciate" scholarly work than the "ordinary citizen." Deference to professionals, particularly writing for them, is an extension role recommended by Hobbs and Vaughan (1974) as the one extension activity, and essentially the only one, likely to be acceptable to social science departments strongly oriented to high academic achievement. Their reasoning, of course, is that performing in this manner is likely to be most useful in the application of sociological knowledge to practical concerns of society.

What then do our data show? Precisely what we stated in hypotheses one and two (see Table 1), and partly what was hypothesized in number three. Nearly two-thirds of the total communication of the Columbia Campus social science faculty and three-fourths of that of the Taiwan faculty was directed to academic audiences -- basic and applied scientists. This was strongly in support of the first hypothesis. With 70 percent of the extension communication of the social science faculty on the Columbia Campus directed to professionals and some 30 percent to the public, and 78 and 22 percent, respectively on the Taiwan Campuses support for the second hypothesis was strongly evident.

The third hypothesis held that communication to academic audiences would be more universal than to extension audiences. The reasoning was that deference to "outsiders" who require modified versions of output regarded as "academically unsound," would be less rewarding. Accordingly, more of the faculty would produce at least something for academia than for extension. Support for this hypothesis was found on the Taiwan but not on the Columbia Campus. Almost a third produced nothing for academia compared to 18.4 percent who

TABLE 1

PERCENT OF THE TOTAL MAN-DAY COMMUNICATION OUTPUT OF THE SOCIAL SCIENCE FACULTY ON THE COLUMBIA AND TAIWAN CAMPUSES DIRECTED TO BASIC AND APPLIED SCIENTISTS AND TO PROFESSIONALS AND THE PUBLIC

Country - Campus			Audiences - from theory to practice			
			Academic		Extension	
	(N)	Total (%)	Basic Scientists (%)	Applied Scientists (%)	Professionals (%)	Public (%)
Columbia Campus (U. of MO)	(125)	100.0	39.0	28.0	23.2	9.8
Taiwan	(103)	100.0	33.5	43.5	18.0	5.0
National Taiwan University	(74)	100.0	40.3	39.0	16.0	4.7
Chunghsing University	(29)	100.0	16.1	55.4	22.9	5.6

produced nothing for extension. In contrast, less than two percent of the Taiwan social science faculty produced nothing for academia and 13.6 nothing for extension. Thus, the faculty participated quite generally in extension communication at the one and two journal article level of equivalency (1 to 239 man-days).[2] Production at higher levels (the approximate equivalent of three or more journal articles) was more to academia than to extension (professionals and the public). (See Table 2.)

Another apparent condition, not related to the hypotheses formulated, and contrary to what the authors expected was that the Taiwan social scientists were communicatively more productive at all levels across the theory to practice continuum than the social science faculty on the Columbia Campus. This posed an additional question in need of explanation.

Possible Explanation of the Variations in Communication Orientation

Truly definitive answers as to why the faculty directed their communication to specific audiences would have to be obtained by relating the communicative output of each faculty member to perceptual, prior socializing influences, socio-economic, reference group influence, organizational contraint, perceived reward, and other variables (likely to condition their communicative productivity and the chief audiences to which it is directed). This is being done as another part of the current study. In this paper we only look at a few of the variables from selected categories that we think will provide some insight into why communication output was so heavily skewed toward academia and why the Taiwan social scientists apparently were communicately more productive than those on the Columbia Campus.

TABLE 2

PERCENT OF THE SOCIAL SCIENCE FACULTY ON THE COLUMBIA AND TAIWAN CAMPUSES CLASSIFIED BY AMOUNT OF ACADEMIC AND EXTENSION COMMUNICATION

Campus Kind of Communication	Total (%)	Communication Level (Man-day equivalents) None (%)	1-119 (%)	120-239 (%)	240-359 (%)	360-719 (%)	720 & over (%)
Columbia Campus							
Total	100.0	0.0	13.6	12.8	14.4	32.0	27.2
Academic	100.0	2.4	28.0	15.2	16.0	23.2	15.2
Extension	100.0	18.4	36.0	21.6	5.6	10.4	8.1
Taiwan Campuses							
Total	100.0	0.0	5.8	5.8	12.6	35.9	39.8
Academic	100.0	0.9	11.7	9.7	21.4	29.1	27.2
Extension	100.0	13.6	46.6	15.5	8.7	9.7	5.8

The variables selected include: (1) how much the faculty felt a university should be involved in research-service-communication activities along the theory to use continuum (see Figure 4), namely, those necessary to make the system work as an agent for the development and transformation of scientific information into practice; (2) the degree to which they think that reference groups, inside and outside of academia, influence their work; and (3) what they see as the chief organizational constraint for doing applied research, an activity in which over three-fourths of the faculty on the Columbia Campus and almost 90 percent of those on the Taiwan Campuses were interested.

Perceived reference group influence is likely related to both (a) the amount and direction of communication output of the faculty, and (b) the activities in which they think a university should be heavily engaged. With outside (of academia) reference groups already demonstrated to be a very strong positive influence on extension communication (Lionberger and Reddy, 1974) and academia generally negative on the Columbia Campus the authors were first inclined to take note of the amount of influence on own work that the faculty thought selected reference groups inside and outside of academia had on their own work (see Tables 3 and 4). From these it can be readily seen that the faculty on the Columbia Campus were heavily influenced by academia. Colleagues in own academic discipline and those in own department were strong and vied strongly for the first position. With strong influence also from graduate and undergraduate students (both academic), the perceived influence from the academic world was indeed very strong. Strong influence from "outside" reference groups was scattered and very small by comparison to the perceived influence from those within academia.

TABLE 3

PERCENT OF SOCIAL SCIENCE FACULTY ON THE COLUMBIA CAMPUS CLASSIFIED BY AMOUNT OF INFLUENCE THEY THOUGHT DESIGNATED REFERENCE GROUPS HAD ON THEIR WORK

Reference Group	Amount of Perceived Influence						
	0 None (%)		1 Little (%)	2 Some (%)	3 Much (%)	4 Very Much (%)	MD
Colleagues in own Department	0.8	0.8	6.4	39.2	41.6	11.2	2.5
University Colleagues	0.0	4.8	30.4	51.2	12.0	1.6	1.8
Colleagues in Government, Industry & Outside Agencies	1.6	13.6	32.0	41.6	9.6	1.6	1.5
Undergraduate Students	10.4	6.4	24.0	36.0	21.6	1.6	1.7
Graduate Students	7.2	0.8	12.8	42.4	31.2	5.8	2.2
Professionals and Agencies Concerned with People Problems	5.6	15.2	23.2	40.0	13.6	2.4	1.7
University Administration	0.8	20.0	30.4	30.4	12.8	5.6	1.5
Funding Agencies	2.4	16.8	40.0	27.2	11.2	2.4	1.3
General Public	8.0	17.6	33.6	32.8	5.6	2.4	1.3
Colleagues in Academic Discipline	11.2	1.6	12.8	23.2	40.0	11.2	2.5

Rows not adding to 100 percent resulted from a small number who did not answer.

TABLE 4

PERCENT OF SOCIAL SCIENCE FACULTY ON THE TAIWAN CAMPUSES CLASSIFIED BY AMOUNT OF INFLUENCE THEY THOUGHT DESIGNATED REFERENCE GROUPS HAD ON THEIR WORK

Reference Group	Amount of Perceived Influence						
	0 None (%)	1 Little (%)	2 Some (%)	3 Much (%)	4 Very much (%)	NA	
Colleagues in own Department	1.7	4.1	12.4	33.9	37.2	10.7	2.5
University Colleagues	1.7	15.7	27.3	38.0	14.9	2.5	1.6
Colleagues in Government, Industry and Outside Agencies	2.5	17.4	19.0	38.8	18.2	4.1	1.7
Undergraduate Students	6.6	11.6	20.7	24.0	29.8	6.6	.8 1.9
Graduate Students	26.4	8.3	16.5	23.1	22.3	3.3	1.5
Professionals and Agencies Concerned with People Problems	28.9	19.8	13.2	14.9	17.4	5.8	0.5
University Administration	8.3	16.5	28.9	25.6	18.2	2.5	1.4
Funding Agencies	6.6	9.9	10.7	22.3	35.5	14.9	2.5
General Public	40.5	33.1	10.7	6.6	7.4	1.7	0.3
Colleagues in Academic Discipline	24.0	18.2	11.6	22.3	19.8	4.1	0.6

Rows not adding to 100 percent resulted from a small number who did not answer.

For the social science faculty in Taiwan perceived influence from own departmental colleagues was also strong. This had moderate support also from undergraduate and graduate students. But beyond this, influence from academia had very strong competition from a number of reference groups from outside of academia particularly funding agencies. Perceived strong influence from the last is quite understandable for a faculty with a near universal desire expressed to become involved in applied research and the chief deterrent seen as a lack of funds for being able to do so.

Next we turn to how much the faculty on the three campuses thought a university should be involved in activities across the theory to practice continuum (see Table 5 and 6). Also as we do so and note that for all of these activities, basically necessary for a university to operate as an information system, the Taiwan faculty was much more strongly committed than those on the Columbia Campus. We should also recall the high influenc that the Columbia Campus social scientists attributed to students as reference groups in contrast to those outside of academia. This strongly suggests that they see a public university much more as a teaching facility than one for extending the frontiers of basic science knowledge and translating it into usable practice. The first is basically a traditional view of the appropriate role and function of a public university, although admittedly still regarded as one of central importance. Elements and activities that render a university capable of operating across the theory to practice continuum as an information system is relatively new by comparison.

TABLE 5

PERCENT OF THE SOCIAL SCIENCE FACULTY ON THE COLUMBIA CAMPUS CLASSIFIED BY HOW MUCH THEY THINK THE UNIVERSITY SHOULD EMPHASIZE DESIGNATED ACTIVITIES

Activities - arranged on a theory to practice continuum	Total (%) (N=125)*	Amount of Emphasis 0 None (%)*	1 Little (%)	2 Some (%)	3 Much (%)	4 Very Much (%)	MD (%)
Do basic research and publish in refereed outlets	100	0.8	1.6	41.6	39.2	16.8	2.6
Do applied research mainly for utilization outside of own field	100	3.2	13.7	46.0	29.0	4.8	2.2
Teach students outside own department mainly for specialty positions in action agencies	100	0.8	12.9	50.0	27.4	6.5	2.3
Prepare publications on knowledge implications for people outside own discipline (professionals)	100	4.0	5.6	45.6	37.6	5.6	2.5
Consult with and prepare materials for agencies concerned with services to people	100	21.8	24.2	33.1	12.9	6.5	2.2
Work with off-campus people to improve their living conditions	100	14.5	19.4	35.5	19.4	8.1	1.8

*Rows not adding to 100 percent resulted from a small number who did not answer the question

TABLE 6

PERCENT OF THE SOCIAL SCIENCE FACULTY ON THE TAIWAN CAMPUS CLASSIFIED BY HOW MUCH THEY THINK THE UNIVERSITY SHOULD EMPHASIZE DESIGNATED ACTIVITIES

Activities - arranged on a theory to practice continuum	Total (%) (N=103)*	Amount of Emphasis					
		0 None (%)	1 Little (%)	2 Some (%)	3 Much (%)	4 Very Much (%)	MD (%)
Do basic research and publish in refereed outlets	100	1.7	0.8	7.4	44.6	45.5	3.5
Do applied research mainly for utilization outside of own field	100	0.0	4.2	13.6	50.8	30.8	3.3
Teach students outside own department mainly for specialty positions in action agencies	100	2.5	7.4	17.4	53.7	19.0	2.8
Prepare publications on knowledge implications for people outside own discipline (professionals)	100	0.8	8.3	25.8	43.3	21.7	2.9
Consult with and prepare materials for agencies concerned with services to people	100	2.5	7.4	32.2	38.8	19.0	2.7
Work with off-campus people to improve their living conditions	100	2.5	12.4	30.6	42.1	12.4	2.7

* Rows not adding to 100 percent resulted from a small number who did not answer the question

Finally, in response to how much they thought 17 organizational constraint, personnel support, finance, colleague relationship, own skill, and professional norm variables operated as barriers to doing applied research, only two were mentioned as very serious by as many as 16 percent of the respondents in either university setting. Lack of operational funds was regarded by the Taiwan faculty as far the most serious. For the faculty on the Columbia Campus "other demands on time" headed the list by a very substantial margin. The seriousness with which the faculty on each of the Taiwan and Columbia Campuses viewed these barriers is indicated in figures 2 and 3. From these both the contrast between the two settings and the seriousness with which they were regarded is apparent.

All of this is not to suggest that perceived barriers to doing applied research is likely to be that simple. Once the money is available, lack of support staff or of computer facilities might come to the fore as they might also if the time pressures on the Columbia Campus faculty were to be removed. What can be said is that these two barriers are seen by the faculty as being most salient.

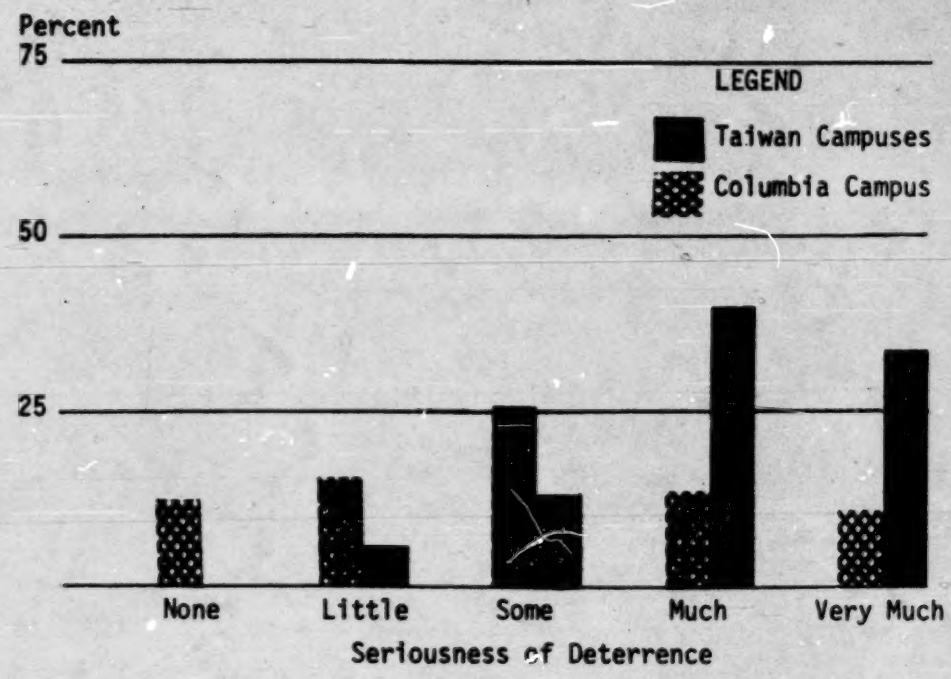


FIGURE 2

RELATIVE SERIOUSNESS WITH WHICH THE SOCIAL SCIENCE FACULTY ON THE TWO CAMPUSES INTERESTED IN DOING APPLIED RESEARCH REGARDED SHORTAGE OF OPERATIONAL FUNDS AS A DETERRENT FOR DOING APPLIED RESEARCH - the constraint seen as most important by the Taiwan university faculty

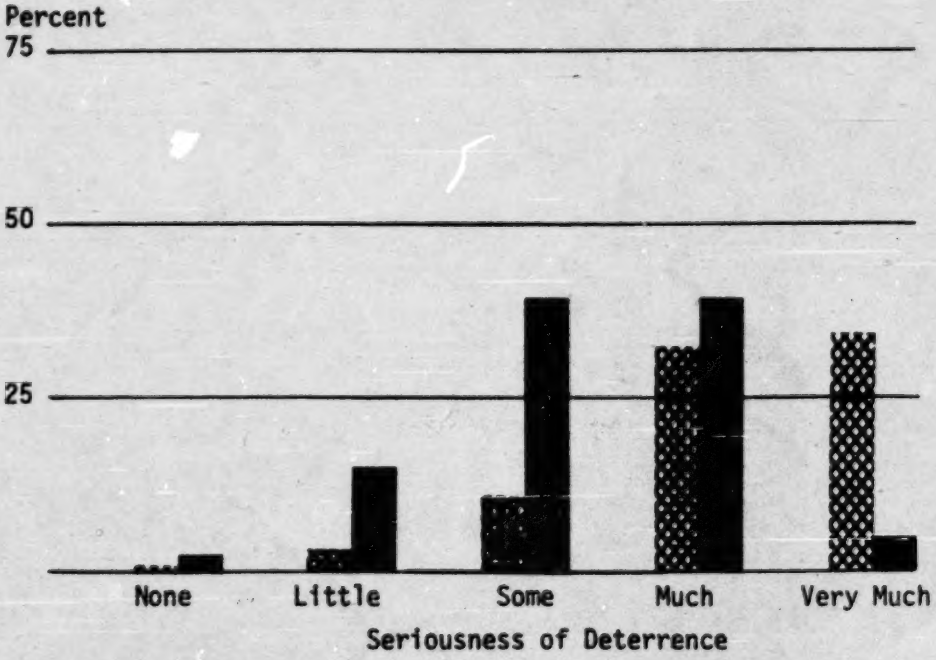


FIGURE 3

RELATIVE SERIOUSNESS WITH WHICH THE SOCIAL SCIENCE FACULTY ON THE TWO CAMPUSES INTERESTED IN DOING APPLIED RESEARCH REGARDED LACK OF TIME AS A DETERRENT FOR DOING APPLIED RESEARCH - the constraint seen as most important by the Columbia campus faculty

Implications for the Operation of the University as an Information System

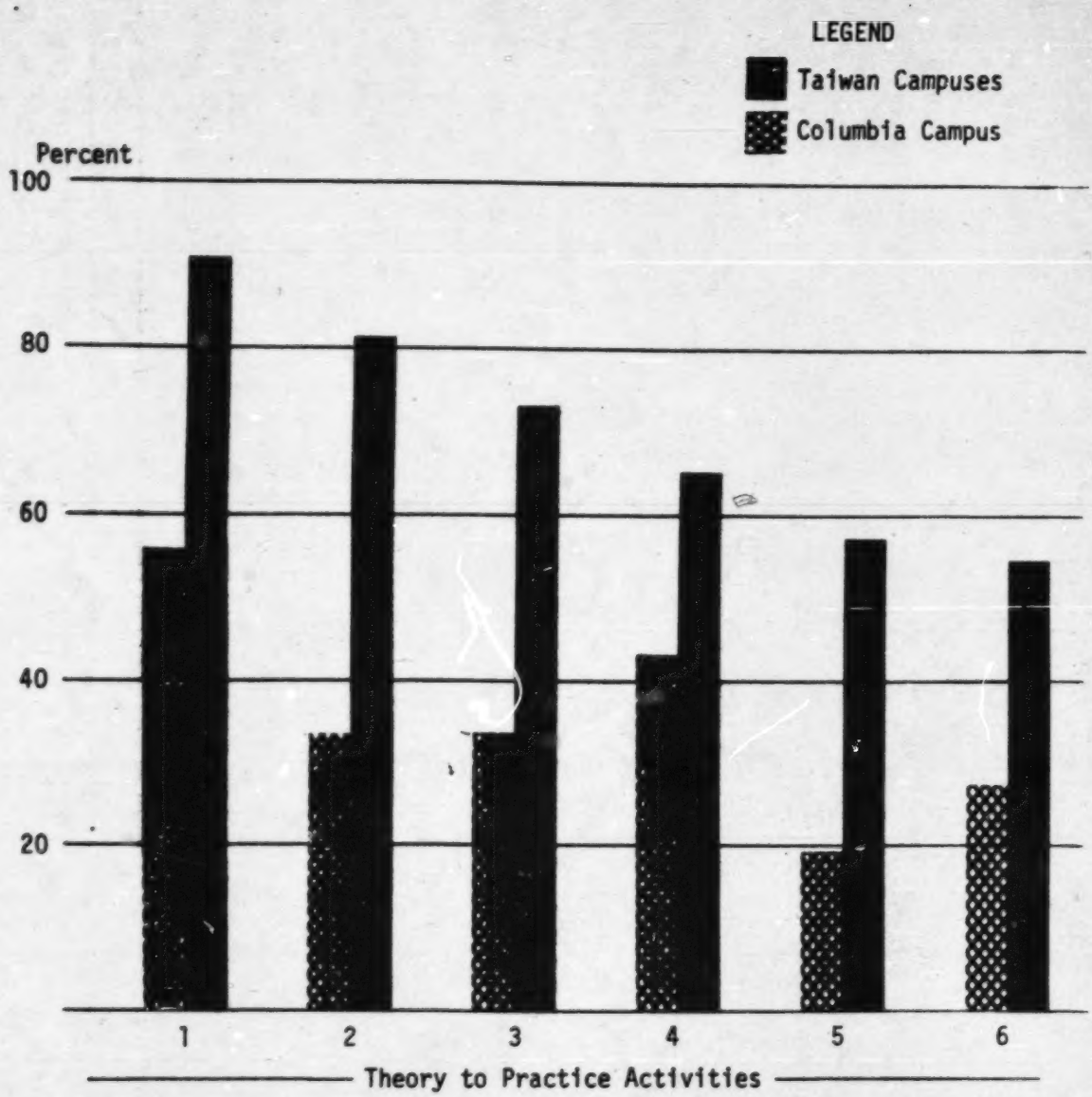
Perhaps for a university to operate at maximum capacity as an instrument for putting to use knowledge developed within the system, communication would need to be disproportionately directed to extension audiences. But we note that the situation was distinctly the reverse on both campuses. This, of course, is not to deny the need for communication within academia as a means of information exchange and even status achievement, all requirements for greater productivity at this level. To be sure this is necessary for the system to maintain an ever enhanced basic science body of knowledge upon which to draw for the more practical concerns of society. If this does not continually happen the system eventually will run out of something new to apply. But all things considered, comparatively more communication to extension audiences than to academics is probably needed to make the system work well from a public service point of view.

In regard to the Columbia Campus vs. Taiwan Campuses it seems a bit paradoxical that extension communication by a social science faculty in universities quite removed from a land grant university philosophy and tradition would communicate relatively more to extension audiences than in a university founded upon a philosophy of service to society and a knowledge base presumably dedicated to public need.

One explanation might be that the social science faculty on the Columbia Campus being greatly influenced by academic traditions are indeed laggards (Rogers and Shoemaker, 1968, pp. 185) in adopting concepts and ideas that would make the system work as an information system in contrast to the more traditional teaching of on-campus students. This indeed might be the case. Academia is hardly noted for its innovativeness or for its ability to reward deviants (innovators) from the hard academic line (Havelock, 1971, pp. 3-14).

Why should the Taiwan Campuses faculty be more innovative in assuming service roles more in line with the land grant university position? The authors suggest that the answer might at least partially reside in being a part of a society dedicated to national plans and planning with an expectation that public agencies including universities and their faculty will contribute to the achievement of national goals and objectives. Although academic endeavors tending to the theory end of the theory to practice activity continuum were more favored than those tending to the "use" end (see Figure 4) the Taiwan social science faculty were much more committed than the Columbia Campus faculty to high university involvement and all activities having to do with translating information into usable practice and getting it disseminated to potential user clienteles. More of the Taiwan social science faculty were interested in doing applied research. They were likewise more influenced by reference groups outside of academia, the last being generally negative to becoming involved in applied concerns, particularly those involving oral rather than written communication.

If we move a little closer to the theory end of the continuum, namely, communicating with professionals rather than to the public, we see that this is more acceptable, particularly if communication is via publication rather than face-to-face or in group meetings. Writing for professionals would seem to be reasonably acceptable to academia as we have already noted and as suggested in Figure 4 by the way the Columbia Campus social scientists rate writing for professionals in comparison to other extension related activities. Although no cause and effect relationship can rightfully be attributed, the social science faculty on the Taiwan Campuses reported more influence from outside (of academia) reference groups on own work. Which comes first, deference to outside reference groups or communication that elicits rewards from such groups cannot be established



1. Do basic research
2. Do applied research
3. Teach students outside own discipline
4. Prepare publications for outsiders (professionals)
5. Test innovations for local adaptability
6. Work with off-campus people to improve living conditions

FIGURE 4

PERCENT OF THE SOCIAL SCIENCE FACULTY ON THE TAIWAN AND COLUMBIA CAMPUSES WHO THOUGHT THE UNIVERSITY SHOULD BE INVOLVED MUCH OR VERY MUCH IN DESIGNATED THEORY TO PRACTICE ACTIVITIES

from this study. But it is likely that the existence of outside reference group influences is a necessary condition for obtaining high extension communication. There is some evidence to suggest (Hoffsommer and Dobey, 1961) the potential for such reference group formation may exist well before it materializes and that the emergence of such influence might well be speeded up by appropriate action. Perhaps the early practice of requiring the faculty of land grant universities to spend some time in the field (with the public) each year might help; an idea still in vogue in the Peoples' Republic of China.

As we move back still further on the theory to practice continuum -- to doing applied research or even adaptive testing -- many of the faculty appear to be willing to be personally involved but relatively few on the Columbia Campus think that a university should be much or very much involved in such activities. One reason previously suggested was that the social science faculty on the Columbia Campus still see the university primarily as a teaching institution quite aside from their own personal willingness to become somewhat involved in the applied research activity.

Chief constraints for those who are so involved or would be willing to become involved, as seen on the Columbia Campus, are time demands from other things that the faculty are expected to do. On the Taiwan Campuses lack of financial resources is seen as the chief barrier. Amoelerative action that might be taken in both cases would seem to be quite clear.

Why the faculty on the Columbia Campus share more universally in extension than academica communication in contrast to those on the Taiwan Campuses is difficult to say. But with institutionalized communication outlets and requests from the extension services for information help in the form of conferences or short courses frequent, opportunity for extension

communication would indeed be very high on the Columbia Campus; perhaps even difficult to escape. Also, the academia requirements imposed through carefully refereed system of manuscript review and relative lack of oral channels involving only participation in a conference or short course would make extension communication easier. All of this may well counter act the greater incentive to produce for academia.

In conclusion, it is apparent that universities in both settings have a capability and a latent willingness to work across the theory to practice continuum and that many in fact do so despite conditions which tend to make communication at the higher levels of abstraction more attractive. Yet, more incentives and removal of organizational constraints are needed to encourage more applied research and extension activity as a supplier of specialty information to the consuming public.

FOOTNOTES

1. This model assumes that most new information and innovations suited to use of adopter clienteles is ultimately derived from basic science knowledge through theory to practice transformation process. This requires basic science research, applied research, innovation (sometimes referred to as development) testing of innovations for local adaptability, and finally re-specifying them in a manner usable for adopters in their own social systems.

   In order to do this, three functions must be performed, namely, innovation (research and development), dissemination (getting the new information and innovations disseminated to user clienteles, Havelock, 1971, Chapter 3; Coughenour, 1967), and finally integration which requires treating the new information or technology into local user social systems. These functions are noted across the top of Figure 1 and the activities from theory to practice vertically on the left hand side of the model. The first two functions tend to become institutionalized activities of specialized social systems as in land grant universities (Havelock, Kellogg, and Knapp, 1966) or in industry while performance of the last -- integration -- remains basically a problem that the user has to solve in his local social subsystem.

2. The estimated man-days required to complete a journal article, research included, were 120 by the faculty on the Columbia Campus and 120 man-days by those on the Taiwan Campuses.

REFERENCES

Clark, K. E.
1957 America's Psychologists: A Survey of a Growing Profession. Washington, D.C.: American Psychological Association, Chapter 3.

Coughenour, C. Milton
1967 "Some General Problems in Diffusion from the Perspective of the Theory of Social Action," Diffusion Research Needs, Columbia, Missouri: Missouri Agricultural Experiment Station, North Central Regional Subcommittee for the Study of Diffusion of Farm Practices, North Central Regional Research Bulletin 186, pp. 5-21.

Dennis, W.
1954 "The Bibliographies of Eminant Scientists," Scientific Monthly 79, pp. 180-183.

Havelock, Ronald G.
1971 Planning for Innovation through Dissemination and Utilization of Knowledge. Ann Arbor, Michigan: Institute for Social Research, final report to the United States Department of Health, Education, and Welfare.

Hobbs, Daryl and C. Edwin Vaughan
1975 "The Sociologist in Extension as Applied Social Scientist," Columbia, Missouri: Department of General and Rural Sociology, University of Missouri, April, (mimeographed).

Hoffsommer, Harold and D. C. Dubey
1961 A Sociological Study of Panchayati Raj in Rajasthan and Andhra Pradesh. Mussoorie, U.P., India: Central Institute of Study and Research in Community Development, pp. 5-12.

Kellogg, Charles E. and David C. Knapp
1966 The College of Agriculture: Science in the Public Service. New York: McGraw-Hill.

Lionberger, Herbert F. and B. Anji Reddy
1975 "Reference Group Influence on Extension Communication of the Social Science Faculty in a Midwestern Public University," Missouri Agricultural Experiment Station, University of Missouri-Columbia.

Longwell, John H.
1970 The Centennial Report 1870-1970 of the College of Agriculture. Columbia, Missouri: College of Agriculture, University of Missouri-Columbia.

Meltzer, B.
1949 "The Productivity of Social Scientists," American Journal of Sociology 55, pp. 25-29.

Reddy, B. Anji and Herbert F. Lionberger
1975 "Adoption of University Concepts by a Midwestern University Community," paper presented at the Midwest Sociological Society Meetings, Chicago, April 10-12.

Reiff, R.
1961 "The Competitive World of the Pure Scientists," Science, Vol. 134, No. 3494, (December): 1957-1962.

Rogers, Everett M. and Floyd Shoemaker
1971 Communication of Innovations. New York: The Free Press.

Sowers, Christopher
1962 "The Land Grant University 'Development Organization' in Transition: The Case of the Cooperative Extension Service," in Directing the Cooperative Extension Service, selected papers presented at the Seventh National Cooperative Extension Administrative Seminar, Madison, Wisconsin, (April 30 - May 4).